REPETITIVE POWER PULSE GENERATOR WITH FAST RISING PULSE

Reference to Related Application

The present application claims priority benefit of U.S. Provisional Application No. 60/201,584, filed May 3, 2000, titled "REPETITIVE POWER PULSE GENERATOR WITH FAST RISING PULSE," the entire contents of which is hereby incorporated by reference.

Background of the Invention

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Field of the Invention

The invention relates to reliable solid-state pulse generators for generating repetitively short, high power pulses with relatively fast rise times.

Description of the Related Art

High voltage pulse generators, with relatively fast rise-times, are typically used to drive gas discharge loads such as lasers and discharge devices for pollution control applications. In the past, such pulse generators used thyratrons to generate the desired pulses. However, thyratrons are relatively unreliable, relatively heavy, and require complex electrical control systems. Solid state devices, although lighter and potentially more reliable than thyratrons, can switch less power on a per-device basis, Thus, a number of solid state devices are needed to replace a single thyratron. In some configurations where many solid-state devices are connected together, failure of one solid-state device can trigger the failure of many devices in the circuit. Moreover, solid state devices, although potentially more reliable than thyratrons, are relatively less tolerant of over-voltage and/or over-current transients. Solid state devices can be permanently damaged by a single over-voltage transient lasting only a few nanoseconds. In many pulse generators, the solid-state devices are used to drive an inductive load such as a transformer. Inductive loads are prone to generate voltage spikes when the current through the inductor is suddenly switched off (as typically occurs at the end of a